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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,259	08/26/2003	Yasunori Suzuki	241973US90	2085

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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER
BAYARD, EMMANUEL

ART UNIT	PAPER NUMBER
2611	

NOTIFICATION DATE	DELIVERY MODE
10/24/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No.	Applicant(s)	
	10/647,259	SUZUKI ET AL.	
	Examiner	Art Unit	
	Emmanuel Bayard	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This is in response to RCE filed on 8/8/07 in which claims 1 and 3-6 are pending.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hongo et al U.S. Pub No 2003/0053552 A1 in view of Wright et al U.S. patent No 7,260,365 B1.

As per claim 1, Hongo et al teaches transmitter comprising: an input-side digital multi-port directional coupler configured to divide and combine digital transmission signals of N channels by digital processing and configured to output N-- channel N-combined signals to N transmission paths channels [0046], respectively (see figs. 2-4, 7-8 elements 11, 1, 14, 21 and paragraphs [0046], [0150], [0167-0168]); N predistorters inserted in said N transmission paths channels, respectively, configured to provide compensating predistortions to the N-combined signals outputted from said input-side digital multi-port directional coupler (see figs. 2-4 element PD1-PDn and paragraph [0148-0149]); N transmitting parts inserted in said N transmission paths channels, respectively, configured to convert output signals from said N predistorters to N high-

frequency signals, each of said N transmitting parts including a power amplifier for amplifying power of the high-frequency signal (see figs. 7-8 elements B1-C1, Bn-Cn D1-E1-Dn-En and paragraphs [0046], [0191-198]); an output-side multi-port power combiner configured to divide and combine said N high-frequency signals to output N high-frequency transmission signals (see figs. 2-4 and 7-8 elements 3, 21 and paragraph [0197-0202];, wherein based on said compensating signals, said N predistorters generate compensating predistortions and impart said compensating predistortions to said N-combined signals from said input-side digital multi-port directional coupler, respectively, to cancel the distortion components at said power amplifiers (see figs. 2-4 and 7-8 element 2 and abstract and paragraph [0018]).

However Hongo et al does not teaches N receiving parts configured to extract, from said N high-frequency signals, distortion components produced by the power amplifiers and configured to generate, based on said distortion components, compensating signals which control said N predistorters.

Wright et al teaches and N receiving parts configured to extract, from said N high-frequency signals, distortion components produced by the power amplifiers and configured to generate, based on said distortion components, compensating signals which control said N predistorters (see figs. 24-25 and col.45, lines 59-67 and col.46, lines 1-10).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Wright et al into Hongo et al as to adjust the characteristics of the predistorted signals so that a deviation from overall linearity would be compensated and

subsequently reduced while maintaining a nearly constant gain attribute during communication between a cellular base station, a public switch network, a mobile service switching center and a data sources (see abstract and col.45, lines 40-55).

As per claim 3, Hongo et al teaches wherein said N predistorters are digital predistorters configured to impart said compensating predistortions to said N-combined signals from said input-side digital multi-port directional coupler by digital processing (see figs. 7-10), and which further comprises s: N digital-to-analog converters inserted in said N transmission paths channels configured to convert the outputs from said N predistorters to analog signals and configured to apply said analog signals to said N transmitting parts, respectively (see figs. 7-8 elements E1-En).

However Hongo et al does not teaches N analog-to-digital converters configured to convert said compensating signals from said N receiving parts to digital compensating signals and configured to apply said N digital compensating signals to said N digital predistorters.

Wright et al teaches N analog-to-digital converters (see figs. 24-25 element 126 and col.45, lines 40-55) configured to convert said compensating signals from said N receiving parts to digital compensating signals and configured to apply said N digital compensating signals to said N digital predistorters.

It would have been obvious to one of ordinary skill in the art to implement the teaching of Wright et al into Hongo et al as to adjust the characteristics of the predistorted signals so that a deviation from overall linearity would be compensated and subsequently reduced while maintaining a nearly constant gain attribute during

communication between a cellular base station, a public switch network, a mobile service switching center and a data sources (see abstract and col.45, lines 40-55).

As per claim 3, Hongo et al and Wright et al in combination would teaches wherein said N predistorters channels are analog predistorters, and which further comprises N digital-to- analog converters inserted in said N transmission paths channels configured to convert said N-combined signals output from said input side digital multi-port directional coupler to analog signals for application to said N analog predistorters, said N receiving parts providing said compensating signals to said N analog predistorters as to adjust the characteristics of the predistorted signals so that a deviation from overall linearity would be compensated and subsequently reduced while maintaining a nearly constant gain attribute during communication between a cellular base station, a public switch network, a mobile service switching center and a data sources (see abstract and col.45, lines 40-55).

As per claim 5, Hongo et al teaches wherein each of said N transmitting parts includes: an up-converting part configured to up-convert the corresponding one of said N analog signals to a high-frequency signal of the transmission frequency band (see paragraphs [0238-0244]; and the power amplifier configured to amplify the power of said high-frequency signal and configured to apply said power-amplified high-frequency signal to said output side multi- port directional coupler(see figs. 2-4 and 7-8).

As per claim 6, Hongo et al teaches a detecting part configured to detect the corresponding one of said high-frequency signals (see fig.16 element 73); a band-pass filter configured to extract a distortion component by said power amplifier from said

detected output (see fig.16 element 74 and paragraph [0021]); and a control part configured to generate said compensating signal based on said distortion component (see fig.16 element 75).

However Hongo does not teach N receiving parts includes: a detecting part configured to detect the corresponding one of said high-frequency signals of said N transmission paths channels teaches; a band-pass filter configured to extract a distortion component by said power amplifier from said detected output and a control part configured to generate said compensating signal based on said distortion component.

Wright et al teaches and N receiving parts configured to extract, from said N high-frequency signals, distortion components produced by the power amplifiers and configured to generate, based on said distortion components, compensating signals which control said N predistorters (see figs. 24-25 and col.45, lines 59-67 and col.46, lines 1-10).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Wright et al into Hongo et al as to adjust the characteristics of the predistorted signals so that a deviation from overall linearity would be compensated and subsequently reduced while maintaining a nearly constant gain attribute during communication between a cellular base station, a public switch network, a mobile service switching center and a data sources (see abstract and col.45, lines 40-55).

Conclusion

Helms U.S. Patent No 6,996,378 B2 teaches a transmitter.

Ghannouchi et al U.S.Pub No 2003/0197559 A1 teaches an active predistorting linearizer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is 571 272 3016. The examiner can normally be reached on Monday-Friday (7:Am-4:30PM) Alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571 272 3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tuesday, October 16, 2007

Emmanuel Bayard
Primary Examiner
Art Unit 2611

EMMANUEL BAYARD
PRIMARY EXAMINER